Patterns of adaptation to cancer during psychological care

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CHAPTER 4

Benefit finding trajectories in people with cancer: predictors and relationships to depressive and anxiety symptoms

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Abstract

Objective: This study aimed to (1) identify trajectories of benefit finding in people with cancer receiving psychological care; (2) examine whether age, gender, education, years after diagnosis, and disease severity distinguished these trajectories; and (3) examine the associations of benefit finding trajectories with level and course of depressive and anxiety symptoms.

Methods: Participants were 241 people with cancer who received psychological care at one of the seven psycho-oncology institutions in the Netherlands. Data were collected before the start of psychological care, and three months and nine months thereafter. A latent class growth analysis was performed to identify benefit finding trajectories. Chi-square tests and ANOVAs were performed for the second and third research questions.

Results: Five benefit finding trajectories were identified: 'high level-stable' (8%), 'very low level-small increase' (16%), 'low level-small increase' (39%), 'moderate level-small increase' (29%), and 'low level-large increase' (8%). Perceived prognosis was found to distinguish these trajectories: people with a favourable prognosis were more likely to report consistently high levels of benefit finding over time, while people with an unfavourable/uncertain prognosis were more likely to experience a large increase in benefit finding. People who followed distinct benefit finding trajectories also reported differential courses of depressive symptoms, but not anxiety symptoms. Compared with the other four trajectories, people in the 'low level-large increase' trajectory group reported the largest decreases in depressive and anxiety symptoms over time.

Conclusions: People with cancer showed distinct trajectories of benefit finding while undergoing psychological care. Only a small proportion of them reported a large increase in benefit finding. This group also showed the largest improvements in psychological symptoms over time.

Introduction

People with cancer may not only experience negative psychological outcomes (e.g., depressive and anxiety symptoms), but also positive outcomes (e.g., changes in life priorities, increased appreciation of life, and becoming a stronger person) (Arpawong, Richeimer, Weinstein, Elghamrawy, & Milam, 2013; Brix et al., 2013; Danhauer et al., 2013; Helgeson, 2010; Schroevers, Kraaij, & Garnefski, 2011). In previous studies, these positive changes have been described using various terms, such as posttraumatic growth (Tedeschi & Calhoun, 2004), stress-related growth (Park, Cohen, & Murch, 1996), and benefit finding (Affleck & Tennen, 1996). Because benefit finding seems to be the broadest term, this study used this term to encompass the range of positive changes reported by people with cancer.

Tedeschi and Calhoun (2004) suggest that benefit finding (which they referred to as post-traumatic growth) is the result of actively struggling with and cognitively processing stressful life events, and that it evolves over time as individuals become more able to process the stressors. Longitudinal studies in people with cancer have found that benefit finding develops soon after cancer diagnosis and increases in the first year after diagnosis (Danhauer et al., 2013; Liu, Wang, Wang, Su, & Wang, 2013; Manne et al., 2004). Previous studies also examined the course of benefit finding in people with cancer who were receiving psychological care. Increases in benefit finding were reported by people with cancer who received cognitive-behavioural stress management, which was not primarily designed to increase benefit finding (Antoni et al., 2001; Antoni et al., 2006; McGregor et al., 2004; Penedo et al., 2006).

Calhoun and Tedeschi (2004) proposed that there may be different benefit finding trajectories over time in trauma survivors who engage in benefit finding, with some people reporting sustained and enhanced benefit finding and others reporting decreased benefit finding. However, as previous studies mainly examined average changes in benefit finding, few studies have addressed this assumption. One study in people with HIV found four distinct courses of benefit finding over an 18-month period in natural adaptation: ‘always reporting benefit’ (42%), ‘never reporting benefit’ (27%), ‘lost benefit’ (18%), and ‘gained benefit’ (13%) (Milam, 2004). To establish a better understanding of the differential courses of benefit finding in cancer patients receiving psychological care, this study first aimed to identify the distinct trajectories of benefit finding in this population.

Provided that distinct benefit finding trajectories can be identified, it is also important to distinguish these trajectories. Previous studies have examined the relationships of socio-

demographic and medical characteristics with concurrent and future levels of benefit finding in people with cancer, but findings are inconsistent. Some studies found a higher benefit finding in those of a younger age (Bellizzi et al., 2010; Brix et al., 2013; Schroevers, Helgeson, Sanderman, & Ranchor, 2010), of a lower education level (Jansen, Hoffmeister, Chang-Claude, Brenner, & Arndt, 2011), who had a longer time since diagnosis (Brix et al., 2013; Manne et al., 2004; Sears, Stanton, & Danoff-Burg, 2003), and who had more severe disease (Bellizzi et al., 2010). Conversely, other studies found a higher benefit finding in people of a higher education level (Sears, Stanton, & Danoff-Burg, 2003) and a shorter time since diagnosis (Zebrack et al., 2012). Few studies have examined the predictive value of these characteristics on changes in benefit finding. Based on previous literature, the present study specifically focused on age, gender, education, years since diagnosis, and disease severity (i.e., prognosis, metastases, and cancer recurrence), and examined whether these factors could distinguish distinct trajectories of benefit finding.

As Tedeschi and Calhoun (2004) perceive benefit finding as an independent outcome, they do not predict that benefit finding is related to psychological functioning in trauma survivors. Numerous studies have examined the relation of benefit finding to psychological functioning and produced inconsistent findings. In a meta-analysis of mainly cross-sectional studies, Helgeson, Reynolds, and Tomich (2006) found that benefit finding was associated with fewer depressive symptoms and more positive well-being, but also more intrusive and avoidant thoughts about the stressor. Benefit finding was not related to anxiety, global distress, or quality of life. Several more recent studies have also yielded mixed results. Several longitudinal studies in cancer patients found that a higher baseline level of benefit finding was associated with less future distress (Liu et al., 2013; Rinaldis, Pakenham, & Lynch, 2010), whereas other longitudinal studies found no association between benefit finding and future psychological symptoms (Llewellyn et al., 2013). One reason for these inconsistent findings could be that benefit finding is an on-going process that possibly has different meanings and effects on psychological functioning over time (Helgeson et al., 2006; Sawyer, Ayers, & Field, 2010). Most empirical studies in people with cancer did not consider the possibility of different courses of benefit finding when examining the role of benefit finding on psychological functioning. Thus, a third aim of this study was to examine how distinct trajectories of benefit finding were associated with psychological symptoms.

The first aim of this study was to examine whether distinct benefit finding trajectories can be observed in people with cancer receiving psychological care at specialized psycho-

oncological institutions. Based on the findings of Milam (2004), we expected to observe the following distinct benefit finding trajectories: one trajectory characterized by stably high benefit finding, one with stably low benefit finding, one with decreases in benefit findings, and one with increases in benefit finding. The second aim was to examine whether age, gender, education, years since diagnosis, and disease severity (i.e., prognosis, metastases, and cancer recurrence) could distinguish these trajectories. Type and duration of psychological care were also examined as predictors of trajectories. The third aim was to examine whether benefit finding trajectories were associated with the level and courses of depressive and anxiety symptoms. As previous studies did not examine the association of changes in benefit finding with the selected characteristics or with psychological symptoms, we had no specific hypothesis for the second and third aims.

Methods

Participants and procedure

Participants were people with cancer who sought help at one of the seven specialized psycho-oncology institutions in the Netherlands between September 2008 and March 2010. When patients sought psychological care at one of these institutions, they were provided with information about the current research. Inclusion criteria were as follows: (1) diagnosed with cancer and seeking help, (2) older than 18 years, and (3) able to complete questionnaires in Dutch.

A total of 611 persons were contacted about this study, and 524 agreed to participate and provided written informed consent. The 87 people who declined did not differ significantly from the 524 people who consented with respect to age or gender. Of the 524 people, only 384 completed the baseline assessment before psychological care (T1), because 123 people dropped out, nine did not complete the baseline measurement, and eight changed their minds about undergoing psychological care. There were no significant differences in age or gender between the 384 participants and the 140 non-participants. Of the 384 people, 278 (72%) completed the second assessment after three months (T2), and 241 (63%) completed the third assessment after nine months (T3). Compared to those 241 people, the 143 drop-outs were less educated, more likely to be male, more likely to have an unfavourable prognosis, and less likely to have received an operation ($p < 0.05$). There were no significant differences in baseline levels of benefit finding or depressive and anxiety symptoms between the 241 people and the 143 drop-outs. The analysis was conducted in those 241 people, of whom 26

missed the T2 measurement. As the analyses could be performed despite missing data, these 26 people were included.

Measures

Socio-demographic and medical characteristics (e.g., age, educational level, cancer type, perceived prognosis) were assessed via self-report questionnaire at T1. Educational level was divided into three categories: low = primary/lower vocational, middle = secondary/middle vocational, and high = university /higher vocational. Patients indicated that they perceived their prognosis as one of the following: favourable, unfavourable, or uncertain.

Psychological care characteristics were obtained using a self-report questionnaire at T2 and T3. Psycho-oncology institutions offered the following different types of psychological care: individual therapy, group therapy, and other therapy (e.g., haptonomy). As each participant may have received more than one type of therapy, psychological care was classified into four categories: individual, group, individual and group, and other (all with/without other therapy). Patients also reported whether they had completed psychological care at T2 and T3, separately.

Benefit finding was measured with the 'perceived benefits' subscale of the Illness Cognition Questionnaires for chronic diseases (Evers et al., 2001). This 18-item questionnaire comprises three six-item subscales: acceptance, helplessness, and perceived benefits. The perceived benefits subscale measures the extent to which people perceive benefits from disease. A sample item is 'I have learned a great deal from my illness'. Each item can be answered on a 4-point scale ranging from 1 ('not at all') to 4 ('completely'). Total score ranges from 6 to 24, with higher scores indicating greater perceived benefit. An average score of 16 was previously reported for people with cancer (Bossema et al., 2011). The perceived benefits subscale has good validity and reliability (Evers et al., 2001). In this study, Cronbach's α coefficients ranged from 0.87 to 0.88.

Depressive symptoms were measured with the 16-item version of the Center for Epidemiologic Studies Depression Scale (CES-D) (Radloff, 1977). This version was found to be a more valid measure of depressive symptoms in people with cancer (Schroevers, Sanderman, van Sonderen, & Ranchor, 2000). A sample item is 'I felt depressed'. Items were answered on a 4-point scale ranging from 0 (<1 day) to 3 (5–7 days). Total score ranges from 0 to 48, with higher scores indicating greater depression. For the 16-item CES-D, good

reliability and validity were reported in people with cancer (Schroevers et al., 2000). In this study, Cronbach's α coefficients ranged from 0.88 to 0.91.

Anxiety symptoms were measured with the six-item version of the State-Trait Anxiety Inventory (STAI) (Marteau & Bekker, 1992; Spielberger, Gorsuch, & Lushene, 1970). A sample item is 'I am confused'. Items are answered on a 4-point scale ranging from 1 ('not at all') to 4 ('very much'). Total score ranges from 6 to 24, with higher scores indicating higher anxiety. This version of the STAI has been found to have good reliability and validity (Marteau & Bekker, 1992). In this study, Cronbach's α coefficients ranged from 0.84 to 0.86.

Statistical analysis

General Linear Modelling (GLM) was performed using SPSS 20.0 to examine average changes in benefit finding and psychological symptoms. Cohen's *d* was calculated to measure the magnitude of change. Pearson's correlation analysis was used to examine the relationship between changes in benefit finding and psychological symptoms over time.

To identify distinct trajectories of benefit finding, a latent class growth analysis (LCGA) with robust maximum likelihood estimation was performed in Mplus 7.1 (Muthén and Muthén, 1998-2012). LCGA can be used to identify unobserved differences in growth trajectories over time, and can estimate the intercepts, and the linear and quadratic slopes for each latent class (Nagin, 1999). This study tested models that ranged from one to six classes. Several criteria were used to determine the best representative model. First, the following statistical criteria were checked: the Bayesian Information Criterion (BIC), the Akaike Information Criterion (AIC), entropy, the Bootstrap Likelihood Ratio Test (BLRT), and the Vuong-Lo-Mendell-Rubin likelihood ratio test (VLMR). The BIC and AIC are measures of the relative fit of different models, and lower BIC and AIC values indicate a better fit. Entropy was used to inspect latent class separation. A model with a higher entropy (at least 0.6) is considered to have better class separation (Asparouhov & Muthén, 2013). The BLRT and VLMR were used to test whether a model with 'K classes' is better than a model with 'K-1 classes' (Jung & Wickrama, 2008; Nylund, Asparoutiov, & Muthén, 2007). Significant BLRT and VLMR indicate that the 'K classes' model is better than the 'K-1 classes' model (Jung & Wickrama, 2008; Nylund et al., 2007). Second, several non-statistical criteria were used to select a model. The addition of one extra class should be conceptually meaningful and represent a class that is clearly different from other classes in the model with fewer classes. The additional class should also contain a substantial number of people (at least 5%) (Nylund

et al., 2007). The analytic procedure in Mplus applies the Full Information Maximum Likelihood and the Expectation Maximization Algorithm, which assumes that missing data can be ignored (Muthén, 2002). To examine whether the missing data affected the model selection results, the LCGA was repeated for those 205 people with complete data. According to the selected model, each participant was assigned to a trajectory group based on the latent class posterior distribution. This membership was exported to SPSS and used to represent trajectories of benefit finding in the following analysis in SPSS. In order to describe changes in benefit finding for each trajectory group, separate GLMs on benefit finding over time were performed within each trajectory group.

To determine whether trajectories differed from one another on the selected characteristics, Chi-square tests and ANOVAs were used to compare the trajectories for each variable. To examine whether benefit finding trajectories were related to the *course* of psychological symptoms, interaction effects between trajectories and time were examined in GLM for depressive and anxiety symptoms in the entire sample. Second, to examine whether benefit finding trajectories were related to *levels* of psychological symptoms across time, one-way ANOVAs were performed for each time point. Third, to describe changes in psychological symptoms over time within each trajectory, separate GLMs were performed on depressive and anxiety symptoms for each trajectory group.

Results

Participants' characteristics

The socio-demographic, medical, and psychological care characteristics of the 241 participants are shown in Table 1. Mean age was 51.39, approximately 80% were women, and 50% were highly educated. Almost half of the patients had been diagnosed with breast cancer, and around half of the participants had received individual psychological therapy (with/without additional other therapy).

Average changes in benefit finding and psychological symptoms in the entire sample

The mean scores of benefit finding, depressive symptoms, and anxiety symptoms at T1, T2, and T3 are shown in Table 2. There were significant increases in benefit finding over time, mainly from T1 to T2. Symptoms of depression and anxiety decreased significantly from T1 to T3, and moderately from T1 to T2. Increases in benefit finding from T1 to T3 were

significantly correlated with decreases in depressive (r = -0.34, p < 0.01) and anxiety symptoms (r = -0.31, p < 0.01) over the same period.

Table 1. Socio-demographic and medical characteristics of the study sample

		Mean (SD)
Age (in years)	*M* (SD)	51.39 (10.6)
	Range	25 – 79
Years after diagnosis	*M* (SD)	3.29 (5.72)
	Range	1 – 36
		% (n)
Gender	Male	19.9% (48)
	Female	80.1% (193)
Relationship	Yes	79.7% (192)
	No	19.1% (46)
	Missing	1.2% (3)
Educational Level	Low	17.4% (42)
	Middle	32.0% (77)
	High	49.0% (118)
	Missing	1.7% (4)
Cancer type	Breast	45.6% (110)
	Digestive system	7.1% (17)
	Lung	2.9% (7)
	Hematologic	8.7% (21)
	Head and neck	6.2% (15)
	Gynecological	5.8% (14)
	Multiple malignant	7.9% (19)
	Others	14.9% (36)
	Missing	0.8% (2)
Under medical treatment	Yes	49.8% (119)
Type of medical treatment	Operation	15.8% (38)
	Chemotherapy	8.3% (20)
	Radiotherapy	2.1% (5)
	Operation + Chemotherapy	20.7% (50)
	Operation + Radiotherapy	17.0% (41)
	Chemotherapy + Radiotherapy	5.4% (13)
	Operation + Chemotherapy + Radiotherapy	24.5% (59)
	Other	6.2% (15)
Recurrence	Yes	14.1% (34)
Metastases	Yes	31.9% (77)
Co-morbid diseases	Yes	25.2% (61)

Identification trajectories of benefit finding

As can be seen in Table 3, the BIC suggested that the 4-class model was the best, whereas the AIC favoured the 6-class model. However, the BLRT and the VLMR suggested that the 5-class model was best: the significant BLRT and VLMR indicated that the 5-class model was better than the 4-class model, and the non-significant BLRT and VLMR showed that the 6-class model was not better than the 5-class model. Furthermore, the 5-class model had the highest entropy, indicating it had the best class separation. In addition, for the 5-class model, the smallest group contains a substantial number of the total sample (8%). Therefore, the 5-class model was chosen to represent benefit finding trajectories.

We performed the same analysis in those 205 patients with complete data. Similarly, a 5-class model was found to be best. This model reflected the same five trajectories of benefit finding as examined in the full sample. The class size (38%, 30%, 15%, 9%, and 8%) was also comparable to the model in the full sample (39%, 29%, 16%, 8%, and 8%). Thus, it can be concluded that missing data did not impact the results of model selection.

The parameter estimates for the 5-class model are shown in Table 3. Mean levels of benefit finding for each trajectory group are shown in Table 2 and Figure 1. Class 1 ('high level-stable group', 8%) started out with a high level of benefit finding at T1 and remained relatively stable in benefit finding from T1 to T3. Class 2 ('very low level-small increase group', 16%), Class 4 ('low level-small increase group', 39%), and Class 3 ('moderate level-small increase group', 29%) started out with very low, low, and moderate levels of benefit finding at T1, respectively. They all showed small increases in benefit finding from T1 to T2 and remained stable until T3. Class 5 ('low level-large increase group', 8%) started out with a low level of benefit finding at T1 and reported large increases in benefit finding between T1 and T2, and remained at a high level of benefit finding until T3.

Predictors of benefit finding trajectories

As shown in Table 4, perceived cancer prognosis was the only factor that distinguished benefit finding trajectories ($p < 0.05$). Patients with a favourable prognosis were more likely to belong to Class 1 ('high level-stable group'), whereas those with an unfavourable/uncertain prognosis were more likely to be in Class 5 ('low level-large increase group').

Table 2. Means and SDs of benefit finding, depression, and anxiety at T1, T2, and T3 in the whole sample and each class and results of pairwise comparison

				Pairwise comparison					
	T1	T2	T3	T1 - T2		T2 - T3		T1 - T3	
	Mean (SD)	Mean (SD)	Mean (SD)	*F-value*[a]	*d*	*F-value*[a]	*d*	*F-value*[a]	*d*
Benefit finding									
Total	14.42 (4.42)	16.09 (4.41)	16.24 (4.23)	74.55***	0.38	1.01	0.03	50.44***	0.42
Class 1	22.27 (1.99)	22.61 (1.72)	22.87 (0.99)	0.21	0.07	0.28	0.06	0.46	0.14
Class 2	8.31 (1.66)	9.73 (2.07)	10.21 (2.48)	12.71**	0.33	0.74	0.14	7.69**	0.48
Class 3	18.11 (1.70)	19.15 (2.14)	18.38 (2.64)	8.03**	0.24	3.32	0.18	3.59*	0.06
Class 4	12.88 (2.14)	14.27 (2.51)	14.67 (2.44)	13.91**	0.29	0.95	0.12	12.01***	0.42
Class 5	12.33 (1.47)	19.03 (1.69)	19.87 (2.09)	121.12***	1.50	2.28	0.17	87.51***	1.71
Depression									
Total	14.58 (7.57)	11.21 (6.86)	9.77 (7.09)	46.57***	0.47	10.65**	0.21	49.25***	0.66
Class 1	9.02 (6.57)	7.47 (6.22)	6.28 (4.59)	0.52	0.21	0.91	0.17	1.06	0.37
Class 2	16.26 (7.10)	13.83 (8.10)	13.08 (9.06)	4.02*	0.38	0.35	0.13	3.45*	0.50
Class 3	12.62 (6.45)	10.45 (6.53)	9.74 (7.25)	9.50**	0.30	1.25	0.10	8.91***	0.39
Class 4	16.99 (7.62)	13.55 (8.33)	11.16 (8.03)	15.61***	0.55	8.81**	0.32	23.26***	0.85
Class 5	15.82 (10.54)	8.22 (6.44)	6.37 (5.64)	15.67**	1.01	1.99	0.25	12.89***	1.24
Anxiety									
Total	14.17 (3.48)	12.53 (3.35)	12.18 (3.25)	51.45***	0.48	3.01	0.11	42.57***	0.59
Class 1	11.57 (3.03)	10.64 (3.63)	9.64 (1.86)	0.89	0.27	2.34	0.30	2.81	0.57
Class 2	16.01 (3.68)	13.88 (3.01)	13.98 (3.85)	13.47**	0.58	0.02	0.04	6.80**	0.63
Class 3	13.89 (3.09)	12.01 (3.16)	11.82 (3.12)	26.76***	0.55	0.21	0.05	16.05***	0.61
Class 4	14.45 (3.34)	13.41 (3.50)	12.94 (2.26)	9.34**	0.33	2.51	0.15	10.22***	0.49
Class 5	13.89 (4.84)	10.89 (3.25)	10.63 (3.33)	7.61*	0.80	0.20	0.08	7.79**	0.89

Note: *$p < .05$; **$p < .01$; ***$p < .001$; [a] Separate GLMs were conducted to examine the course of benefit finding, depressive and anxiety symptoms in SPSS. Given that SPSS used a Listwise deletion of the missing values in the GLM, all GLM analyses in this table were performed among those patients with complete data (benefit finding: $n = 205$; depressive symptoms: $n = 206$; anxiety symptoms: $n = 205$)

Table 3. Latent class growth modelling selection and parameter estimates for the selected model

No. of Classes	BIC	AIC	Entropy	BLRT	VLMR	Class Prevalence					
						1	2	3	4	5	6
1	3985.58	3964.67	n/a	n/a	n/a	100%					
2	3771.55	3736.71	0.77	235.97***	235.97***	51%	49%				
3	3710.29	3661.50	0.77	83.21***	83.21**	26%	46%	28%			
4	3702.36	3639.63	0.77	29.87***	29.87	21%	34%	10%	35%		
5	3705.49	3628.83	0.80	18.80***	18.80*	8%	16%	29%	39%	8%	
6	3716.04	3625.43	0.76	11.40^{ns}	11.40^{ns}	8%	15%	7%	34%	28%	8%

Parameter estimates for the selected five-class model

	Intercept	Slope	Quadratic
	M (SE)	*M* (SE)	*M* (SE)
Class 1	21.91 (0.91)***	0.17 (0.40)	-0.01 (0.04)
Class 2	8.55 (0.40)***	0.57 (0.20)**	-0.04 (0.02)
Class 3	17.91 (0.34)***	0.51 (0.19)**	-0.05(0.02)**
Class 4	12.78 (0.37)***	0.65 (0.24)**	-0.05 (0.02)*
Class 5	12.55 (0.66)***	2.65 (0.50)***	-0.21 (0.04)***

Note: *$p < .05$; **$p < .01$; ***$p < .001$; SE = Standard Error

The association of benefit finding trajectories with psychological symptoms

ANOVAs showed that the levels of psychological symptoms differed between benefit finding trajectories at T1 [depression: $F(4, 231) = 5.16$, $p < 0.01$; anxiety: $F(4, 232) = 5.01$, $p < 0.01$], at T2 [depression: $F(4, 208) = 4.61$, $p < 0.01$; anxiety: $F(4, 206) = 5.65$, $p < 0.001$], and at T3 [depression: $F(4, 233) = 3.79$, $p < 0.01$; anxiety: $F(4, 233) = 7.13$, $p < 0.001$]. Trajectories characterized by higher benefit finding levels were associated with fewer depressive and anxiety symptoms across time.

The courses of depressive and anxiety symptoms for all five benefit finding trajectories are shown in Table 2 (also see Figure 2-3). Patients with distinct benefit finding trajectories reported differential courses of depressive symptoms [$F_{time\times group}$ (7.62, 382.81) = 2.39, $p < 0.05$], but did not report differential courses of anxiety symptoms [$F_{time\times group}$ (7.49, 374.61) = 10.10, *n.s.*]. For depressive symptoms, the three groups with small increases in benefit finding from T1 to T2 (Classes 2, 3, and 4) reported small to moderate decreases in depressive symptoms in the same time period. The group with the largest increases in benefit finding (Class 5) reported the largest decreases in depressive symptoms in the same period of time. The group with stably high benefit finding (Class 1) maintained stable low levels of depressive symptoms. For anxiety symptoms, patients in the four groups with small to moderate increases in benefit finding (Classes 2, 3, 4, and 5) all reported moderate to large improvements in anxiety symptoms. Patients in Class 1 exhibited consistently low anxiety symptoms.

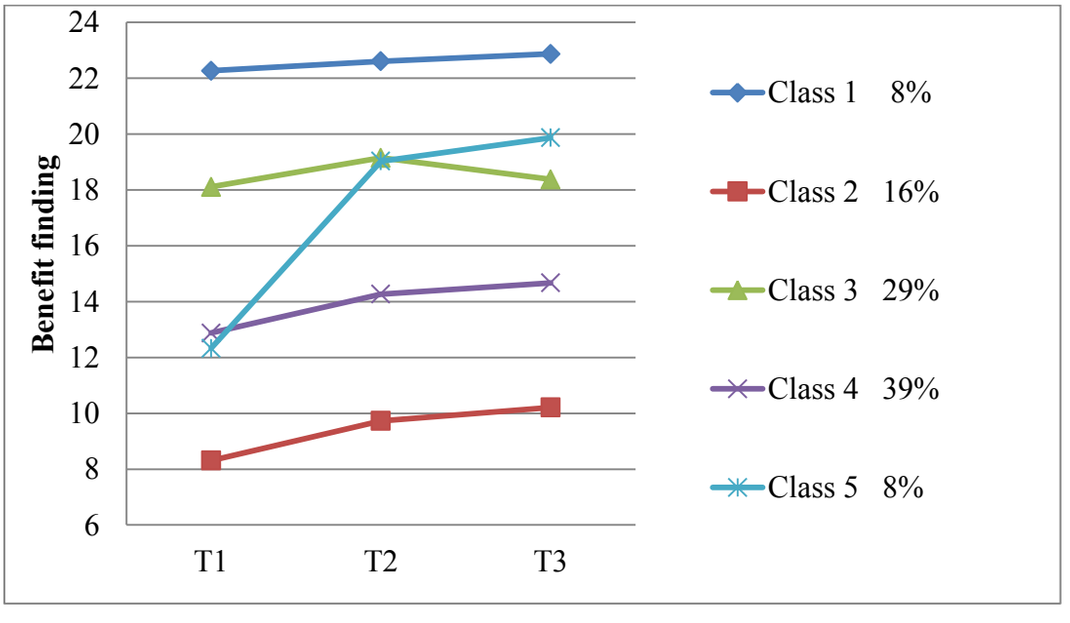

Figure 1. Observed levels and courses of benefit finding at each trajectory group over time

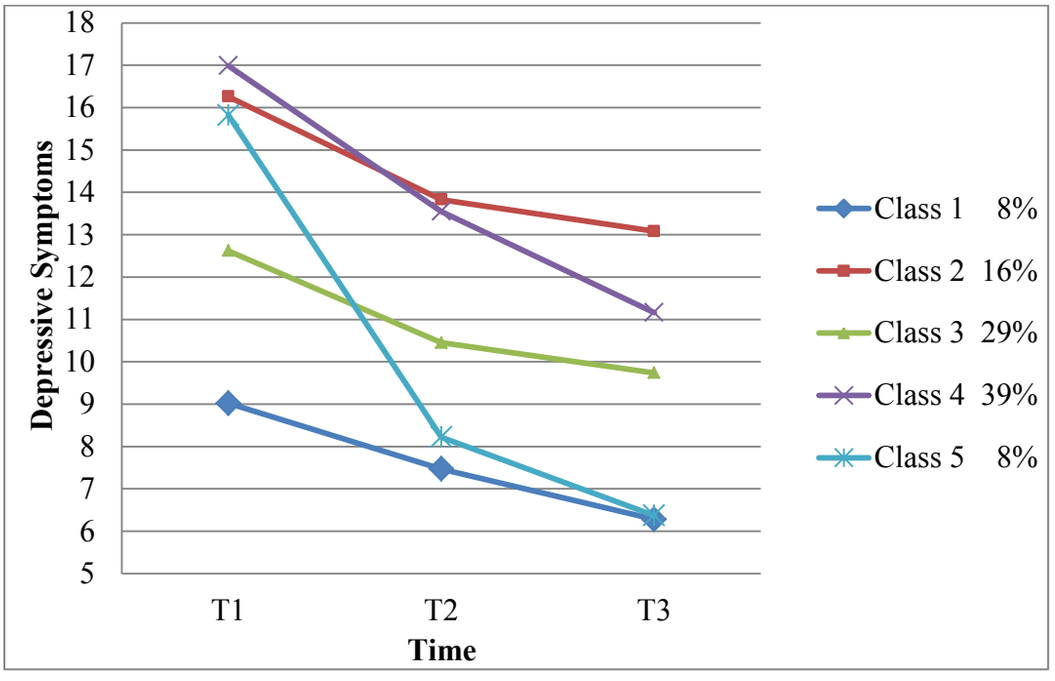

Figure 2. Observed levels and courses of depressive symptoms at each benefit finding trajectory group over time

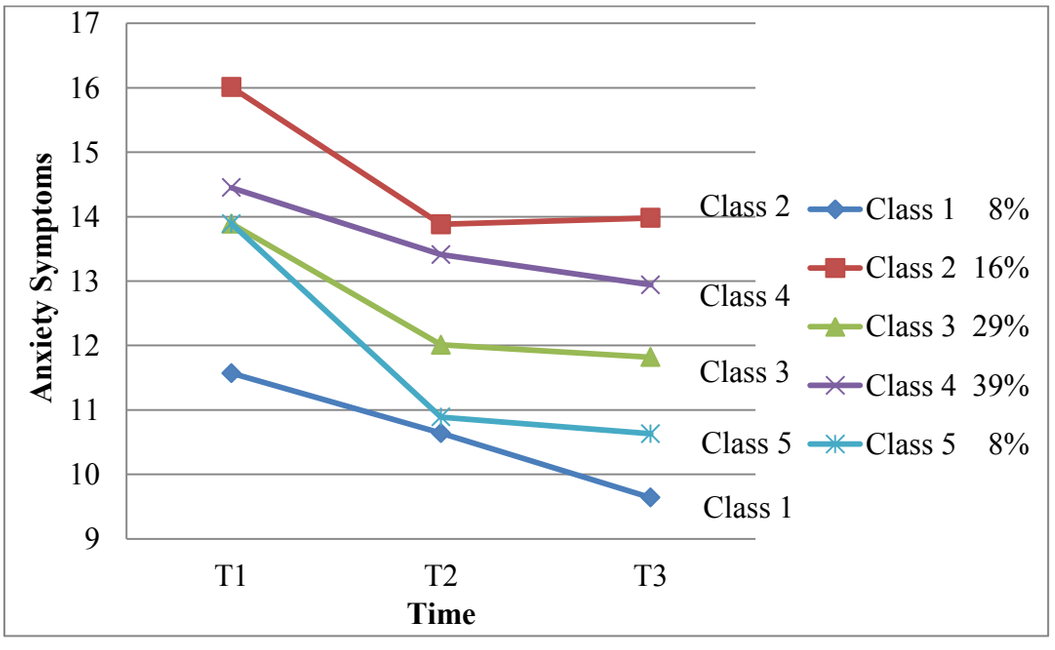

Figure 3. Observed levels and courses of anxiety symptoms at each benefit finding trajectory group over time

Table 4. Predictors of patients with distinct benefit finding trajectories

Predictor	Total Sample	Class 1	Class 2	Class 3	Class 4	Class 5	
	M (SD)	*M* (SD)	*M* (SD)	*M* (SD)	*M* (SD)	*M* (SD)	ANOVA/ χ^2
Age (in years)	51.39 (10.61)	49.11 (11.81)	53.36 (9.67)	49.67 (12.16)	51.35 (9.76)	55.95 (7.93)	*n.s.*
Years after diagnosis	3.29 (5.72)	3.56 (5.37)	2.79 (4.31)	4.34 (7.43)	2.78 (4.63)	2.78 (6.48)	*n.s.*
	%	%	%	%	%	%	
Gender (% woman)	80.0%	88.9%	79.5%	82.6%	78.1%	73.7%	*n.s.*
Educational Level							
Low	17.7%	11.1%	25.6%	10.3%	18.3%	31.6%	*n.s.*
Middle	32.5%	44.4%	15.4%	36.8%	35.5%	26.3%	
High	49.8%	44.4%	59.0%	52.9%	46.2%	42.1%	
Metastases (% yes)	31.9%	11.1%	33.3%	40.6%	29.0%	31.6%	*n.s.*
Perceived prognosis							
Favorable	50.8%	82.4%	43.6%	43.5%	56.3%	36.8%	χ^2 =
Unfavorable	12.1%	11.8%	20.5%	14.5%	7.3%	10.5%	16.42,
Uncertain	37.1%	5.9%	35.9%	42.0%	36.5%	52.6%	$p < .05$
Recurrence (% yes)	14.1%	11.1%	17.9%	17.4%	11.5%	10.5%	*n.s.*
Type of psychological care (T1-T2)							
Individual	58.5%	50.0%	51.3%	62.3%	58.3%	68.4%	*n.s.*
Group	8.3%	5.6%	17.9%	5.8%	6.3%	10.5%	
Individual + Group	14.5%	22.2%	7.7%	15.9%	13.5%	21.1%	
Other	2.1%	0.0%	2.6%	2.9%	2.1%	0.0%	
Missing	16.6%	22.2%	20.5%	13.0%	19.8%	0.0%	
Psychological care finished at T2 (% yes)	22.4%	27.8%	28.2%	17.4%	20.8%	26.3%	*n.s.*
Type of psychological care (T2 - T3)[a]							
Individual	52.1%	53.8%	50.0%	52.6%	51.3%	57.1%	*n.s.*
Group	4.3%	7.7%	3.6%	3.5%	3.9%	7.1%	
Individual + Group	23.9%	23.1%	14.3%	28.1%	25.0%	21.4%	
Other	1.6%	7.7%	0.0%	0.0%	2.6%	0.0%	
Missing	18.1%	7.7%	32.1%	15.8%	17.1%	14.3%	
Psychological care finished at T3 (% yes)	46.5%	61.1%	46.2%	52.2%	38.5%	52.6%	*n.s.*

Note. [a] Types of psychological care were reported by those 187 patients who were under psychological care from T2 to T3.

Discussion

This is the first study to identify benefit finding trajectories in people with cancer during psychological care. Five distinct benefit finding trajectories were identified: 'high level-stable' (8%), 'very low level-small increase' (16%), 'low level-small increase' (39%), 'moderate level-small increase' (29%), and 'low level-large increase' (8%). Perceived cancer prognosis was the only factor that distinguished these trajectories: people with a favourable prognosis were more likely to maintain stably high levels of benefit finding, and people with an unfavourable/uncertain prognosis were more likely to report large increases in benefit finding. The five benefit finding trajectories were significantly related to levels of depressive and anxiety symptoms across time, and to differential courses of depressive symptoms.

Despite that five benefit finding trajectories were identified, a closer look revealed that the five trajectories displayed three main patterns over time. The vast majority of people (i.e., 84%) showed small increases in benefit finding, with people in these three trajectories mainly differing in their absolute levels of benefit finding. A small group (i.e., 8%) started with a low level of benefit finding and reported large increases in benefit finding. Another small group (i.e., 8%) started with high levels of benefit finding and maintained this level over time. The finding that the majority showed small increases in benefit finding and another small group showed large increases is consistent with previous findings in people with cancer receiving psychological care, in which small to moderate increases in benefit finding were observed in all patients (Antoni et al., 2006; Penedo et al., 2006). The present findings add to these studies by showing that differential patterns of benefit finding can be observed during psychological care, with regard to level and course of benefit finding over time.

The five trajectories of benefit finding are partly in line with those observed in a study of people with HIV (Milam, 2004). Our 'high level-stable' trajectory in people with cancer was similar to their 'always reporting benefit' trajectory in people with HIV, and the other four trajectories characterized by small to large increases in our study resembled their 'gained benefit' trajectory. In contrast, the current study of people with cancer did not reveal a group characterized by loss-of-benefit over time. One explanation for this might be that the current study focused on people with cancer who were receiving psychological care, whereas the Milam study was conducted in people with HIV within the context of natural adaptation. If this is the case, psychological care might pre-empt the worsening of benefit finding. Yet, the lack of a control group and the randomized design in this study does not permit such a firm conclusion. Future research could be done to examine this issue. Nevertheless, our findings

regarding benefit finding trajectories in people with cancer, together with the findings in people with HIV, confirm the assumption of Calhoun and Tedeschi (2004) and provide empirical evidence for the differential processes of benefit finding over time in people with life-threatening diseases. This warrants further research into the distinct trajectories of benefit finding in survivors of other types of trauma.

Perceived cancer prognosis was the only factor that significantly differentiated benefit finding trajectories. First, most patients who exhibited a large increase in benefit finding had an unfavourable or uncertain prognosis. This is consistent with the theories of Tedeschi and Calhoun (2004), assuming that a search for benefit is provoked by a severe and threatening trauma that is crucial enough to challenge one's own beliefs and assumptions about the world (Tedeschi & Calhoun, 2004). As for people with cancer, those with a more severe form of cancer are often confronted with a higher likelihood of mortality and prolonged medical treatments, which are likely to facilitate benefit finding (Stanton, Bower, & Low, 2006). Second, the majority of people with consistently high levels of benefit finding reported a favourable prognosis. People with a less severe form of cancer may not experience many physical problems, which may allow for the mobilization of individual resources that could produce positive changes (Collins, Taylor, & Skokan, 1990). However, this seems to conflict with the theories of Tedeschi and Calhoun. Thus, these puzzling findings warrant further research on this topic. Moreover, it should be noted that, in this study, the documented prognosis was based on patient self-report, which was a subjective indicator of disease severity. Yet, two other objective indicators of disease severity (metastases and cancer recurrence) were not found to significantly distinguish benefit finding trajectories. Thus, it seems that how people perceive their cancer severity plays a more important role in the process of benefit finding than does actual disease severity. Future research could examine to what extent perceived and actual cancer severity differ from each other (and the possible interaction between the two) in predicting differential processes of benefit finding.

In addition, although none of the other measured characteristics significantly distinguished benefit finding trajectories, people with consistently high levels of benefit finding tended to be younger, female, and less likely to report metastases than people categorized into one of the other four trajectories. These non-significant findings might have been resulted from the relatively small sample size of this study. Specifically, the 'high level-stable' and 'low level-large increase' trajectories contained only a small number of patients, which may have reduced statistical power and consequently prevented the detection of

significant predictors. Future studies with a larger sample size are needed to further examine the predictive value of these factors for benefit finding trajectories. Another explanation for the null findings could be that the five trajectories of benefit finding were not that distinct from each other, given that most participants experienced a general increase in benefit finding over time.

Trajectories of benefit finding were associated with levels of depressive and anxiety symptoms. Compared to people in other trajectories, those people with consistently high or large increases in benefit finding reported fewer depressive and anxiety symptoms after three and nine months. This is consistent with findings from people with HIV in that those who always experienced or gained benefit reported less depression than did those who never experienced or lost benefit (Milam, 2004). These findings suggest that the development and maintenance of benefit finding are associated with better psychological functioning. Notably, theoretical models do not substantially consider the adaptive effect of benefit finding on psychological functioning. For example, Tedeschi and Calhoun (2004) propose that benefit finding and psychological functioning are independent of each other. As such, benefit finding does not necessarily relate to improved psychological functioning. The present findings are contradictory to this supposition, as this study suggest a clear association between benefit finding and psychological functioning.

Patients with distinct benefit finding trajectories reported differential courses of depressive, but not anxiety symptoms. The courses of depressive symptoms showed similar but opposite patterns to the five trajectories of benefit finding. This could be explained by the reciprocal relationship between benefit finding and depressive symptoms, as proposed by Milam (2006). On the one hand, the presence of depressive symptoms usually comes together with less joy and more negative thoughts, which may impede the development of benefit finding. On the other hand, the process of benefit finding, especially the attainment and maintenance of benefits, may protect against the development of depressive symptoms. In the current study, trajectories of benefit finding and courses of psychological symptoms were examined over the same period; thus, it is difficult to draw a firm conclusion regarding which argument is more valid. Future research is needed to closely examine this issue. Regarding anxiety symptoms, a similar, parallel downward trend of anxiety symptoms was observed for all benefit finding trajectories during psychological care. This indicates that the process of benefit finding is somewhat independent of the process of anxiety symptoms.

Several limitations should be taken into account when interpreting these findings. First, the current measure of benefit finding makes it difficult to obtain more detailed information regarding various domains of benefit finding such as changes in life priorities and spiritual beliefs (Tedeschi & Calhoun, 2004). Thus, it remains unknown whether there are differential benefit finding trajectories within these specific domains of benefit finding. Second, the follow-up time (nine months) was relatively short and consequently may not have been sufficient to detect substantial changes in benefit finding. Third, due to the lack of a control group, it remains unclear whether the observed differential processes of benefit finding were due to psychological care or changes associated with natural adaptation. Therefore, no conclusions can be drawn regarding the effectiveness of psychological care with respect to these distinct benefit finding trajectories. Finally, the majority of people in the present sample were highly educated, middle-aged females who had been diagnosed with breast cancer and had sought and received psychological care. Thus, these findings cannot be generalized to the general cancer population.

Despite these limitations, the present study shows that people with cancer followed different trajectories of benefit finding while receiving psychological care, and that only a small proportion experienced clinically meaningful increases in benefit finding over time. These findings contribute to the existing literature on benefit finding by demonstrating differential processes of benefit finding in people with cancer who are receiving psychological care. Moreover, this study adds to previous trajectory studies on negative outcomes reported by people with cancer (e.g., distress), and confirms that there are also subgroups of people with cancer with distinct trajectories of positive outcomes over time (Henselmans et al., 2010; Lam et al., 2010). This warrants further research on this topic in people with cancer as well as survivors of other kinds of trauma.